

(19)



(11)

EP 1 914 507 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.04.2008 Bulletin 2008/17

(51) Int Cl.:
F42B 5/067 (2006.01)

(21) Application number: **06122573.6**

(22) Date of filing: **19.10.2006**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
 HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
 SK TR**
 Designated Extension States:
AL BA HR MK RS

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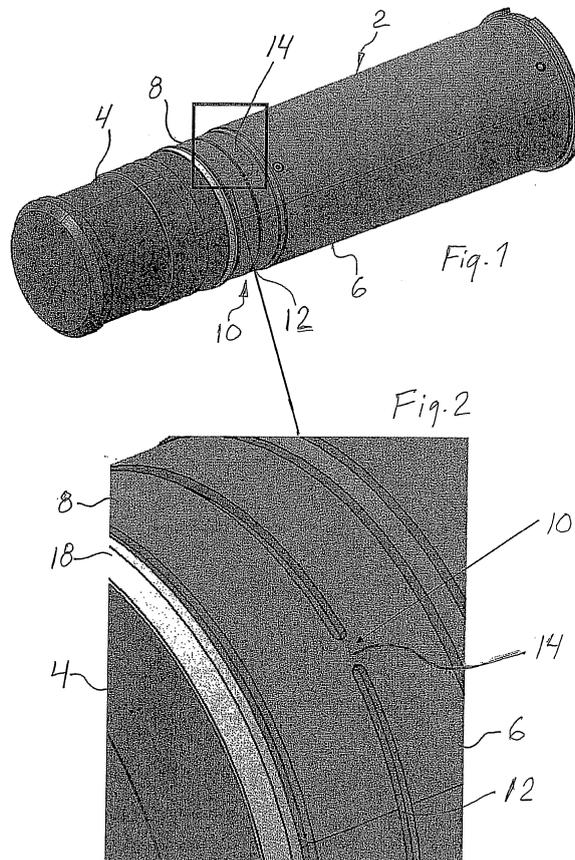
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(54) **An arrangement for a grenade**

(57) The present invention relates to an arrangement for a grenade comprising a shell (4) and a cartridge case (2) with a first section (6) for housing a propellant and a second section (8) in which said shell is fitted by means

of a releasable coupling (18). An intermediate section (10) between said first and second sections (6, 8) is provided with brake indications (12) forming a number of four connecting bridges (14) of case material configured to give away on firing off of the grenade.



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Description**BACKGROUND OF THE INVENTION****1. Technical field of the invention**

[0001] The present invention relates to an arrangement for a grenade, in particular a releasable coupling between a cartridge case and a shell for light anti-armour weapons as Carl Gustav, AT4 and AT4CS. A grenade of this kind comprises a shell and a cartridge case with a first section housing a propellant and a second section in which said shell is fitted by means of a releasable coupling.

2. Description of related art

[0002] In general, a conventional releasable coupling of the initially mentioned kind is configured by means of a grooving machine or by means of a glue line, which joint is performed in order to join together the case and shell until firing off of the grenade.

[0003] One problem is that a releasable coupling of this kind is unreliable regarding what force is required to release the coupling. This results in a variable releasing force from a time to another, as said force mainly is controlled by the manufacturing process and not by a predictable geometrical dimension.

[0004] Another great problem, in particular for heavy grenades, is related to their bad handling points. Said grenades are sensitive to impact by strokes and bumps and cannot withstand drop tests without the coupling being deformed or broken. This might render the ammunition unserviceable, as it would not be able to load in a weapon.

SUMMARY OF THE INVENTION

[0005] One object of the present invention is to provide an arrangement, by means of which it is possible to provide a more reliable grenade than before.

[0006] This is possible with an arrangement of the initially defined kind, in which an intermediate section between said first and second sections is provided with brake indications forming a predetermined number of connecting bridges of case material configured to give away on firing off of the grenade.

[0007] Expedient improvements and developments of said arrangement appear from the appended claims and the following description.

[0008] The invention will be described in more detail below by means of illustrative embodiments with reference to the accompanying schematic drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

Fig. 1 is a perspective view of a cartridge case in one end of which a shell is fitted,

Fig. 2 is a view of a detail of the cartridge case in fig. 1 on a larger scale,

Fig. 3 is a longitudinal view of the cartridge case which illustrates an intermediate section of the same, Fig. 4 and 5 show different cross sections through line A-A in fig 3.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0010] Fig. 1 and 2 illustrate perspective views of a cartridge case 2, in one end of which a shell 4 is fitted by means of a releasable coupling, for example a screw fastening of a conventional kind. The cartridge case 2 is divided into a first section 6 and a second section 8, by means of an intermediate section 10 provided with break indications or notches 12, which are extended partially around the perimeter of the cartridge case 2.

[0011] Therefore, as also appear from fig. 3, the first and second sections 6 and 8 respectively are held together by means of a plurality of connecting bridges 14 of case material, which are formed between said break indications 12 provided in said intermediate section 10 and one of which is shown in figs. 1-3. Preferably, said plurality of connecting bridges 14 are evenly spaced around the perimeter of the intermediate section 10.

[0012] As can be best seen in figs. 4 and 5, according to the disclosed embodiment said plurality can be predetermined to a number of three alternately four connecting bridges 14, 14'. However, the number of connecting bridges 14, 14' is depending on the actual weight of the shell to be loaded in the cartridge case and therefore other desirable numbers can be picked depending on the relevant situation. Said plurality of connecting bridges 14, 14' constitute a jointing 16, 16' intended to be torn when firing off the grenade.

[0013] The number and form of the connecting bridges 14 are geometrically controllable variables, which determine the strength of the jointing 16 and by that the release force required in firing. Advantageously, said variables can, in a simple way, be adjusted to burst at a desired loading stress. The jointing 16 according to the invention brings about less loading spread, compared to the prior art, and can cope better with drop tests, as it is more elastic than prior art jointings.

[0014] The shell can be provided with a thread 18 and screwed into a corresponding thread in the first section, even if it also might be attached to the cartridge case e.g. by means of other suitable screw fastening means.

[0015] Suitably, the natural choice of material for the cartridge casing would be the usual metal, e.g. aluminium, brass etc. or can comprise carbon fibre reinforced polymeric resin or another similar relatively elastic material. Therefore, in turn the jointing 16 according to the invention is configured with a certain degree of inherent elasticity, which makes it insensitive to impact by strokes

and bumps and would withstand drop tests without the coupling being deformed or broken.

[0016] Hence, the above described solution results in as small a variation spread as possible in the releasing force from a time to another and the best opportunity for a reproducible releasing force even for different temperatures. 5

[0017] A further advantage is that the releasing force might be varied in a simple way, by adjusting the form and number of connecting bridges 14 of case material in dependency of the actual weight of an appropriate shell 4. For example, for a case thickness of approximately 1 mm, a notch 12 of approximately 2 mm wideness and four connecting bridges with an arc length of approximately 2,5 mm would be appropriate to achieve a release force of 5 KN. 10 15

[0018] Alternatively, for an identical case thickness and notch, four connecting bridges with an arc length of approximately 10 mm would be appropriate to achieve a release force of 20 KN. Consequently, it is easy to adjust the releasing force with the aim of arriving at zero recoil for the weapon. 20

[0019] IM-requirements are easy to meet simply by unscrewing the shell from the cartridge case and store the shell separated from the cartridge case housing the propellant. 25

Claims 30

1. An arrangement for a grenade comprising a shell (4) and a cartridge case (2) with a first section (6) for housing a propellant and a second section (8) in which said shell is fitted by means of a releasable coupling (18), **characterized in that** an intermediate section (10) between said first and second sections (6, 8) is provided with brake indications (12) forming a plurality of connecting bridges (14) of case material configured to give away on firing off of the grenade. 35 40
2. Arrangement according to claim 1, **characterized in that** the number and form of said plurality of connecting bridges (14) are a predetermined in dependency of the actual weight of the shell (4). 45
3. Arrangement according to claim 1 or 2, **characterized in that** at least three connecting bridges (14) are evenly spaced around the perimeter of the intermediate section (10). 50
4. Arrangement according to one of claims 1-3, **characterized in that** each connecting bridge (14) is made of an elastic material. 55

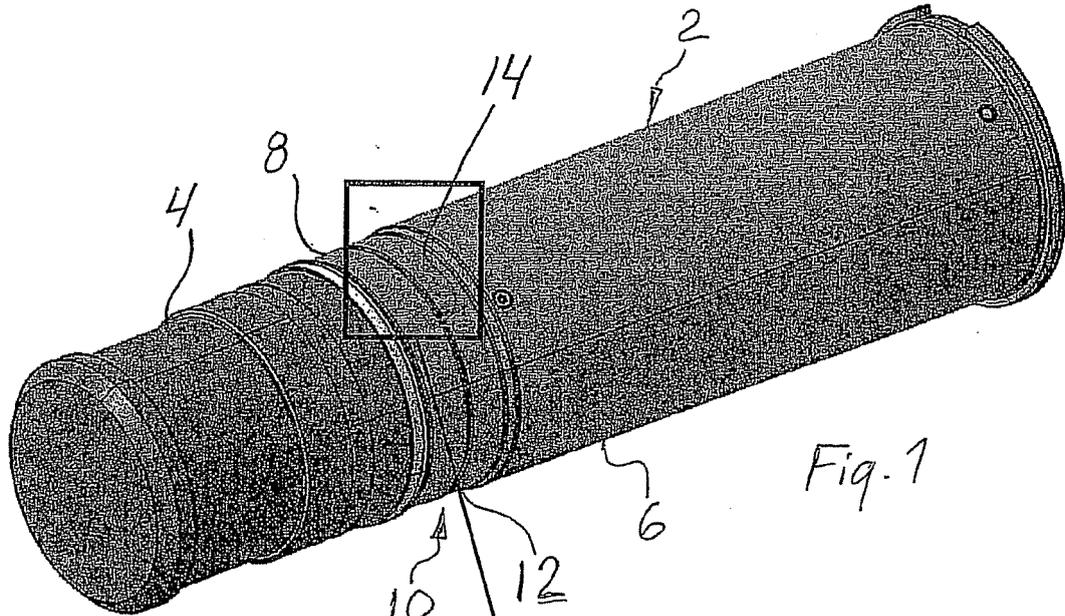


Fig. 1

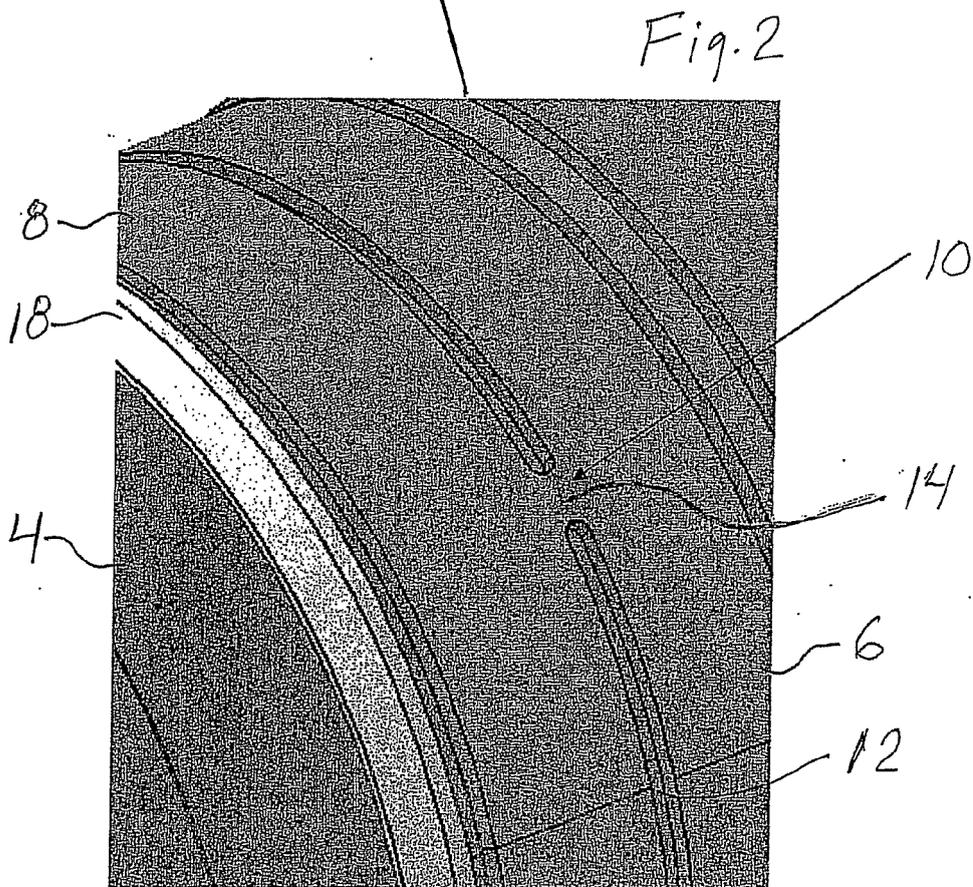


Fig. 2

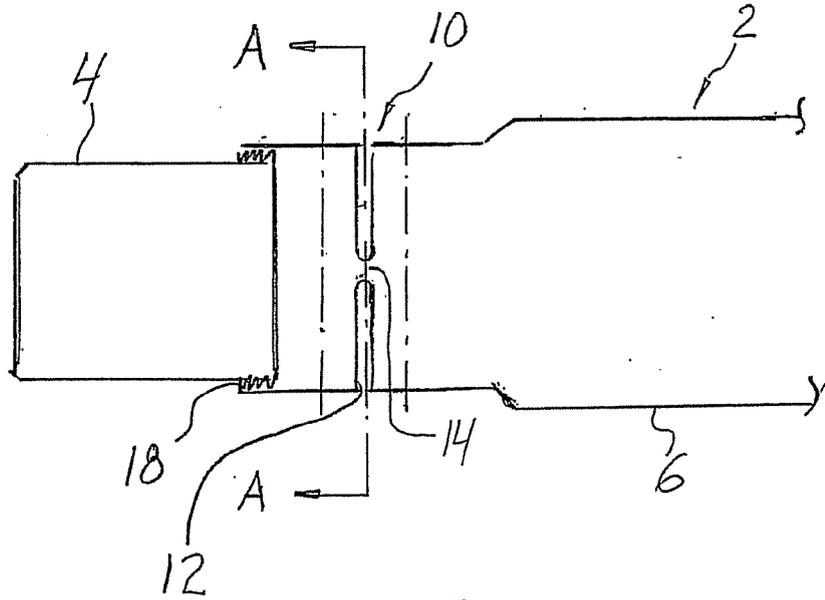


Fig. 3

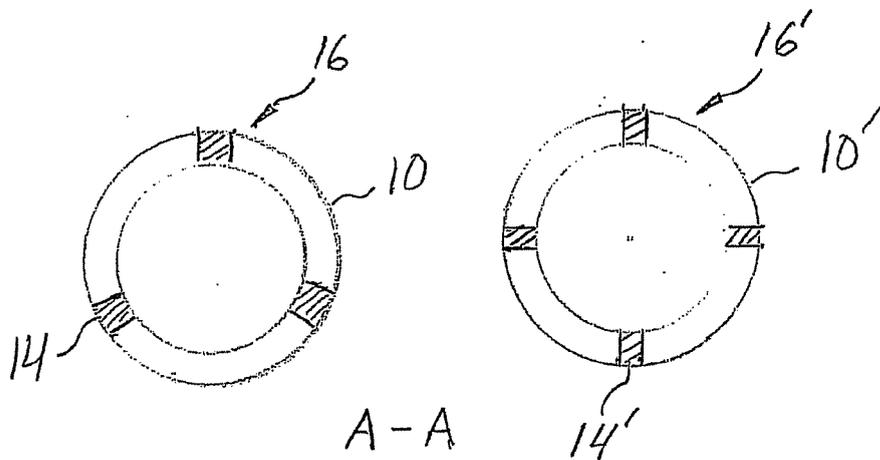


Fig. 4

Fig. 5



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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
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Place of search		Date of completion of the search	Examiner
The Hague		19 March 2007	Menier, Renan
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPC FORM 1503 03.82 (P04001)

ANNEX TO THE EUROPEAN SEARCH REPORT
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